



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/693,186

10/24/2003

Yucong Wang

GP-303432

2595

7590 06/19/2007
LESLIE C. HODGES
General Motors Corporation
Legal Staff, Mail Code 482-C23-B21
P.O. Box 300
Detroit, MI 48265-3000

EXAMINER

CHARLES, MARCUS

ART UNIT

PAPER NUMBER

3682

MAIL DATE

DELIVERY MODE

06/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/693,186

Applicant(s)

WANG ET AL.

Examiner

Marcus Charles

Art Unit

3682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 17-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

This is a second action responsive to the submission filed 03-23-2007, which has been entered. Claims 1-22 are currently pending of which claims 17-22 have been withdrawn from consideration.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 8-12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (US 2002/0019280) in view of Schlegel et al. (6,367,151). In claims 1 and 11, Brown discloses a transmission (300) comprising a housing (308) having a bore (not labeled), a bearing (334a, 408a) within the bore. Brown fails to disclose the bore includes a thermal spray coating. Schlegel et al. discloses a bore of a connecting rod (1) is plasma coated (thermal spray coating) to increase the frictional surface of the bore and to reduce expansion due to extreme heat conditions. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the bore of the housing of Brown so that the bore includes a layer of thermally spray coating in view of Schlegel et al. in order to increase the frictional surface of the bore and to reduce expansion due to extreme heat conditions.

In claims 8 and 14, note the thermal spray coating is applied by plasma thermal spray coating process.

In claims 9-10 and 15-16, it is apparent that the housing of Brown inherently discloses the claimed invention because the housing of Brown comprises a cover and a case.

3. Claims 2, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown and Schlegel et al. as applied to claim 1 above, and further in view of Allen et al. (6,435,830). Imaida et al. and Schlegel et al. do not disclose the thickness of the coating and the thermal coating is from nickel alloy. Allen et al. disclose a thermal spray thermal coating material of 10-40 Cr, 5-35 % Al, 0-7 % Y and the primary balance of Ni (all these values falls within the specified claimed ranges) in order to withstand high temperatures and corrosion. In addition, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the thickness of the coating approximately 0.2mm to 0.8mm, since it has been held that discovering an optimum value of a result effect variable involves only routine skill in the art. *In re Boesch*, 617 f.2nd 272, 205.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of Schlegel et al. and Allen as applied to claim 1 above, and further in view of EP (10209246) to Knepper et al. Brown and Schlegel et al. disclose the claimed invention above, except that the material of the thermal spray coating comprises steel alloy. It is well known in the art that alloy steel exhibit high strength at very high temperature. Knepper et al. disclose a thermally spray coating comprising steel alloy made from 24-35 % Cr, 2-9 % Si, 1-4 % Mn, up to 0.15 C up to 30 % Ni and the balance Fe in order to withstand high temperatures. How ever, Knepper et al. fail to disclose the exact values

Art Unit: 3682

as claimed. It would have been obvious to one of ordinary skill in the art at the time of the invention to select the steel alloy as claimed, since it has been held that discovering an optimum value of a result effect variable involves only routine skill in the art. *In re Boesch*, 617 f.2nd 272, 205.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of Schlegel et al. and Allen as applied to claim 11 above, and further in view of EP (10209246) to Knepper et al. Brown and Schlegel et al. disclose the claimed invention above, except that the material of the thermal spray coating comprises steel alloy. It is well known in the art that alloy steel exhibit high strength at very high temperature. Knepper et al. disclose a thermally spray coating comprising steel alloy made from 24-35 % Cr, 2-9 % Si, 1-4 % Mn, up to 0.15 C up to 30 % Ni and the balance Fe in order to withstand high temperatures. However, Knepper et al. fail to disclose the exact values as claimed. It would have been obvious to one of ordinary skill in the art at the time of the invention to select the steel alloy as claimed, since it has been held that discovering an optimum value of a result effect variable involves only routine skill in the art. *In re Boesch*, 617 f.2nd 272, 205.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown and Schlegel et al. as applied to claim 1 above, and further in view of KR (2005065911) to Kim et al. Brown and Schlegel et al. do not disclose the coating is of Copper alloy. Kim et al. disclose a thermal spray coating comprise a copper alloy with 1-50% Al and Fe respectively, 0-2=0% Ni and the balance of Cu (these values are within the specified claimed ranges) in order to prevent corrosion. Therefore, it would have been obvious to

Art Unit: 3682

one of ordinary skill in the art the time of the invention to modify coating of Imaida et al. and Schlegel et al. such that the coating is a copper alloy in view of Kim et al. having the specified claimed composition as claimed so as to prevent corrosion

7. Claims 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown and Schlegel et al. as applied to claim 1 above, and further in view of Marantz et al. (5,714,205). Brown and Schlegel et al. are silent concerning the application of the thermal spray coating is application by two wires. It is well known in the art to apply thermal coating with two wires in order to protect the molten material from atmospheric contamination. Marantz et al. disclose the process of applying thermal spray coating with two wires (56, 58). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply thermal coating using two wires in view of Marantz et al. in order to protect the molten material from atmospheric contamination.

Response to Arguments


8. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcus Charles whose telephone number is (571) 272-7101. The examiner can normally be reached on Monday-Thursday 7:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ridley Richard can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3682

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Marcus Charles
Primary Examiner
Art Unit 3682
June 03, 2007

74/473.1, 606R, 421A, 475/206, 474/18, 28